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Incoming: 9307483

94-RPS-014

OCT 29 1993

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U.S. Environmental Protection Agency
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Richland, Washington 99352

Mr. David C. Nylander
Kennewick Manager
State of Washington
Department of Ecology
7601 W. Clearwater Avenue, Suite 102
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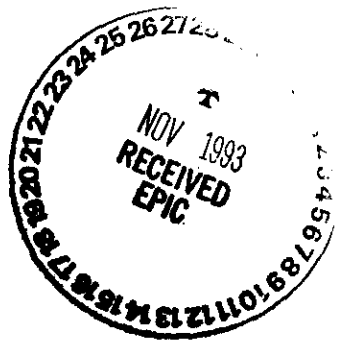


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Dear Messrs. Sherwood and Nylander:

SUBMITTAL OF THE 4843 ALKALI METAL STORAGE FACILITY CLOSURE PLAN, REVISION 0 - NOTICE OF DEFICIENCY RESPONSE TABLE (S-4-1)

The enclosed Notice of Deficiency (NOD) response table for the 4843 Alkali Metal Storage Facility Closure Plan, Revision 0 is being forwarded to the U.S. Environmental Protection Agency (EPA) and State of Washington Department of Ecology (Ecology) in accordance with the November 4, 1993, commitment date. This NOD response table addresses the 48 Ecology comments from the NOD transmittal received December 18, 1992, and the 40 additional Ecology comments from the NOD transmittal received July 22, 1993.

Copies of this NOD response table will be distributed to representatives of your respective organizations as follows:

D. Duncan, EPA (2 copies)

A. Huckaby, Ecology, Kennewick Office (4 copies)

T. Michelena, Ecology, Lacey Office (1 copy)

Ecology Library, Lacey Office (1 copy)

Should you have any questions or require any additional information, please contact Mr. R. N. Krekel of U.S. Department of Energy, Richland Operations Office on (509) 376-4264, or Mr. F. A. Ruck III of Westinghouse Hanford Company on (509) 376-9876.

Sincerely,

James D. Bauer, Program Manager
Office Of Environmental Assurance,
Permits, and Policy
DOE Richland Operations Office

R. E. Lerch, Deputy Director
Restoration and Remediation
Westinghouse Hanford Company

Enclosure:
Notice of Deficiency Response Table (S-4-1)

cc w/encl:
Administrative Records, H6-08
D. L. Duncan, EPA
A. D. Huckaby, Ecology
T. M. Michelena, Ecology

cc w/o encl.:
B. A. Austin, WHC
R. E. Lerch, WHC
S. M. Price, WHC
F. A. Ruck III, WHC
J. A. Seamans, WHC

9358727D
ENCLOSURE

The following comments have been closed and consolidated as agreed during the Unit Manager Meeting of September 8, 1993:

| OPEN COMMENT | COMMENTS CLOSED AND CONSOLIDATED WITH THE OPEN COMMENT |
|---|---|
| 2 | 54, 56, 57, and 58 |
| 3 | 6, 21, 37, 38, 41, and 43 |
| 4 | 11 and 45 |
| 5 | 55 |
| 7 | 8 |
| 10 | 29 |
| 15 | 23, 24, and 25 |
| 27 | 78 and 79 |
| 31 | 42 |
| 52 | 13, 14, 17, 20, 30, 46, 66, 68, and 74 |
| 59 | 76 |

| No. | Comments/Response | Concurrence |
|---|---|---|

1. ECOLOGY COMMENT #1: General. The level of detail in this closure plan is inadequate. The closure plan must contain enough detail to allow the evaluation of whether:

   1. the activities described in the plan satisfy the regulations, or
   2. the conditions assumed in the plan adequately reflect the true conditions of the facility.

   **RL/WHC RESPONSE #1: Comment is too general to address. The level of detail in this closure plan is similar to the level provided in other closure plans which are nearing final approval by Ecology.**

   ECOLOGY COMMENT #2: The detail of this closure plan must be increased to allow

| No. | Comments/Response | Concurrence |
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sufficient assessment of the closure process. Should the deficiencies be addressed sufficiently, no further response is necessary.

2. ECOLOGY COMMENT #1: General. According to section 4.0, Waste Characteristics, most of the waste is mixed (containing both hazardous and radioactive components). But the plan makes few references to safety protocol or cleanup procedures for the mixed waste. Control of health and safety hazards associated with the radioactive component of the waste are inadequately addressed. It is not acceptable to omit the management of the radioactive constituents from the closure plan.

Revise text accordingly to incorporate measures that deal with the radioactive component of the mixed waste.

**RL/WHC RESPONSE #1: The purpose of the closure plan is to address the dangerous wastes and the dangerous waste components of radioactive mixed waste. For the 4843 Alkali Metal Storage Facility (AMSF), the radioactive component of the radioactive mixed waste is addressed on an "information only" basis.**

**The radioactive component of this waste is derived from special nuclear material (SNM). The Atomic Energy Act of 1954, as amended, is the legislation that governs this type of radioactive material.**

**The purpose of the radiation zone in this unit is for radiation protection from the storage of radioactive mixed waste. The use of sealed, containerized storage units has prevented radioactive material from entering the environment and from creating areas of surface contamination. The routine monthly radiation surveys show no evidence of fixed or smearable surface contamination. The lack of surface contamination indicates radioactive materials have not entered the environment.**

**The primary focus of this closure plan is to provide sufficient information to**

| No. | Comments/Response | Concurrence |
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**support clean closure relative to dangerous waste. Worker safety is addressed in Section 7.3.10 "Site Safety." The information provided relative to past radioactive mixed waste storage and potential radioactive contamination is considered sufficient to support this objective.**

ECOLOGY COMMENT #2: The second paragraph of the Hanford Federal Facility Agreement and Consent Order, Section 6.3 states, "[t]he TSD units containing mixed waste will normally be closed with consideration of all hazardous substances, which includes radioactive constituents." Consequently, the focus of this closure is not limited to exclusively addressing the dangerous waste constituents. Because the dangerous and radioactive components of the mixed waste can not be segregated, it is not feasible nor prudent to address the constituents separately.

**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comments have been closed and consolidated with Comment No. 2: No. 54 (General), No. 56 (4.0), No. 57 (7.3.3), and No. 58 (7.3.2).**

**RL/WHC RESPONSE #2: The closure plan will be modified to increase the coverage of radioactive waste and the radioactive portion of mixed waste relative to the *Hanford Federal Facility Agreement and Consent Order*, Section 6.3. However, this information is being provided on an 'information-only' basis to the State of Washington Department of Ecology (Ecology). Please note that neither the *Hanford Federal Facility Agreement and Consent Order* nor the *Atomic Energy Act of 1954*, as amended, grants regulatory authority for radioactive materials and/or waste or for the radioactive portion of mixed waste to Ecology. A detailed discussion of this issue is contained in *Hanford Site Comments on the Draft Permit for the Treatment, Storage, and Disposal of Dangerous Waste for the Hanford Facility*, submitted March 16, 1993.**

3. ECOLOGY COMMENT #1: General. All facilities are likely to have some soil

| No. | Comments/Response | Concurrence |
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contamination as a result of routine drips and spills which must be removed. The closure plan must describe the procedures and criteria to be used for evaluating the extent of soil contamination, and demonstrate that the level of decontamination will satisfy the closure performance standard.

The following information should be included in the closure plan:

1. the location for background soil measurements, etc., and
2. the sampling and analysis methods to be used to evaluate the extent of contamination.

The closure plan must describe how contaminated soils will be managed at closure. The plan should include the following:

1. an estimate of the volume of contaminated soil, and
2. a description of potential treatment or disposal techniques.

**RL/WHC RESPONSE #1: It is inappropriate to assume that soil contamination is a given result of operations at this unit. This is especially true in light of existing documentation to support that no drips or spills occurred which would give cause to instigate a soil sampling program.**

**The waste stored in the 4843 AMSF is reactive, ignitable solids (metallic sodium, metallic lithium). The waste is packaged in an inert gas (such as argon) in air-tight containers to prevent fires. This packaging was done prior to shipping the waste to the 4843 AMSF. While at the 4843 AMSF, the waste containers remain sealed until removed. Because of the use of sealed containers for waste storage, "routine" drips and spills did not occur.**

**There are no free liquids associated with the waste stored in the 4843 AMSF. The waste is stored in a dry form. (The oil mentioned in Appendix C is absorbed oil; see response to Comment No. 4.) The metallic sodium and lithium wastes (both**

| No. | Comments/Response | Concurrence |
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**solids) react with moisture in the air to form solid carbonates/solid hydroxides. The equilibrium between the solid carbonates and solid hydroxides depend upon the moisture content in the air. Free liquids are not required to either generate the carbonates/hydroxides, nor are they needed for the carbonate/hydroxide equilibrium reaction.**

**Only two spills have occurred during waste storage in the 4843 AMSF. Both spills consisted of solid radioactive mixed waste and involved small quantities of material. Each spill was immediately cleaned upon detection, as documented in the Event Fact Sheets in Appendix C. Both spills consisted of solid material from either weld seams or flanges. Neither spill entered the soil.**

**Because of the use of sealed containers for waste storage, absence of free liquids, and solid nature of the waste, soil contamination is considered to be extremely unlikely. Since there is not a reasonable pathway for contamination to have entered the soil, soil sampling is not considered appropriate for this unit.**

ECOLOGY COMMENT #2: Soil sampling will be required. There are several issues which justify this requirement, which are:
1. Waste was stored outside the facility,
2. the location of waste stored outside is unknown,
3. because the location can not be verified, it is doubtful that inspections were conducted on these drums,
and
4. the spill, inspection, and inventory documentation is limited.

Note: The response provided for this NOD does not agree with information provided in response to NOD number 5. Response to number 5 talks about a ten foot boundary around the unit, while the response to number 3 says no soil sampling is necessary.

**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of**

| No. | Comments/Response | Concurrence |
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September 8, 1993, the following comments have been closed and consolidated with Comment No. 3: No. 6 (2-2/38), No. 21 (6-1/40-45), No. 37 (7-7/33-34), No. 38 (7-7/33), No. 41 (F7-1), and No. 43 (F7-3).

RL/WHC RESPONSE #2: Soil sampling should not be required for this unit as no reasonable pathway for contamination of the soil exists. Each issue raised in the Ecology comment is addressed as follows:

1. While waste was stored outside of the building on the west concrete ramp, it was pyrophoric metal in sealed containers. Contact with the normal atmosphere would result in a metal fire. This type of event has never occurred at the 4843 AMSF. Any leakage from the containers would have been noted when the material was inspected or when it was moved inside the building. No such events have been recorded.

2. The location of the waste containers (Containers No. 80, No. 81, and No. 82) stored outside of the building is known. The three containers were palletized and temporarily stored on the west side of the building next to the roll-up door from about February 9, 1989 to June 9, 1989 (about 4 months). The drums were stored outside because the door was inoperable.

3. As indicated in No. 2 above, the location of the drums were known and documented by the inspections. Interviews of the operator assigned to conduct the building inspections, verifies the drums stored outside the building were included in the inspections.

4. Record keeping at 4843 AMSF has been adequate and meets the regulatory requirements. Only two spills have occurred in the building during its life as an alkali metal storage facility and both were documented. Records of the weekly inspections of the facility have been maintained. The maximum inventory of dangerous waste ever stored at the 4843 AMSF has been included in

| No. | Comments/Response | Concurrence |
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**the closure plan, Appendix C, per Washington Administrative Code (WAC) Chapter 173-303-610(3)(a)(iii).**

**In summary, there is not a reasonable pathway for contamination from the metallic lithium and sodium waste. There is no evidence to indicate that the sealed containers stored outside the building were ever breached.**

**Finally, the boundary set forth in Comment No. 5 is compatible with this comment. The Comment No. 5 RL/WHC Response #1 sets forth the rational for the 10 foot boundary. Ecology stated in Comment No. 5 Ecology Comment #2 that they concur with setting the boundary at 10 feet, pending review of aerial photos.**

4. ECOLOGY COMMENT #1: General. The plan does not adequately address potential contamination from the oil the waste was stored in. Petroleum wastes are regulated under WAC 173-303, and therefore needs to be accounted for in the closure plan.

All potentially regulated dangerous waste contaminants must be considered in closure. All probable dangerous waste contaminations must be targeted for sampling and analysis. Incorporate sampling, analysis, and potential decontamination for petroleum wastes into the closure plan. Address potential Polychlorinated Biphenol(*sic*) (PCB) contamination of the oil.

**RL/WHC RESPONSE #1: The oil mentioned in the Appendix C inventory is not free liquid oil used for waste storage. This is oil from a sodium metal spill cleanup within the FFTF. The oil had been absorbed prior to disposal and is not in a free liquid state. Examination of the proper shipping names (PSN) and waste codes in Appendix C indicate that free oil is not present in the waste.**

**In responding to spills of reactive metal at FFTF, a pure oil (e.g., hydraulic oil, turbine oil, or mineral oil) without additives is used. Water is not used as it would react with the sodium or lithium. These types of pure oils are**

| No. | Comments/Response | Concurrence |
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generally not regulated. The status of the oil, as not-regulated, is confirmed by an examination of the PSN and waste codes in Appendix C. If the oil was regulated, it would be indicated by the PSN and waste codes.

If polychlorinated biphenyls (PCB) were present, then they would have been identified in the waste designation process. The PSN and shipping codes do not included PCB codes.

The arguments on the use of sealed containers in the response to Comment No. 3 also applies to the absorbed oil.

Because there was no free liquid oil present and the absorbed oil is in sealed containers, there are no reasonable pathways for the oil to have entered the environment. Also, the waste designation process indicated that the absorbed oil is not regulated and does not contain PCBs. For these reasons, the absorbed oil does not need to be addressed in the closure plan.

ECOLOGY COMMENT #2: The oil may not be regulated in its pure form (as an unused commercial chemical product), but once added to the dangerous waste, it is considered dangerous waste (WAC 173-303-070(2)(a)). Therefore, during clean closure decontamination verification, applicable petroleum products will be required to be incorporated into sampling parameter criteria.

COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comments have been closed and consolidated with Comment No. 4: No. 11 (4-1/10) and No. 45 (Appendix C).

RL/WHC RESPONSE #2: The non-regulated oil does not need to be incorporated into the clean closure because it is not a dangerous waste, nor does it contain dangerous waste constituents. The non-regulated oil does not fall under WAC 173-303-070(2)(a) as it is not a solid waste generated by the operation of the 4843 AMSF. The non-regulated oil was packaged concurrently with the alkali

| No. | Comments/Response | Concurrence |
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**metal waste during FFTF operations.**

5. ECOLOGY COMMENT #1: 2-2/15-16. The closure plan describes the boundary as the area 10 feet from the exterior wall of the facility. It is not stated if the loading pads are within the specified boundary, or how the boundary determination was reached.

The closure plan must account for the maximum extent of operation of the facility. Describe how the boundary determination was made, and if the boundary would include the loading pads. Discuss the temporary storage of waste outside the building and any evidence that this storage area was within the defined boundary. Identify all areas requiring decontamination, and describe in detail all the steps necessary to decontaminate equipment, structures, and soils during partial or final closure. Provide a list of potentially contaminated areas and equipment.

**RL/WHC RESPONSE #1: The boundary of the 4843 AMSF for the purposes of closure is stated in the document to be 10 feet from the exterior walls of the building. This "boundary" was set since the unit currently does not have a legal boundary. WAC 173-303 provides no guidance on setting the boundary of a facility. The activity at the 4843 AMSF consisted of waste storage within the building as described in the closure plan. For a brief period of time (about 3 months) some drums were stored outside of the building but within the 10 foot boundary line. The concrete drive-up ramps to the unit extend 6 feet from the building. It is considered appropriate to set the unit boundary a reasonable distance away from the exterior walls of the building as has been done.**

**Based on process knowledge of how the waste was normally handled, including the temporary storage of waste outside of the building, the 10 foot boundary does cover the maximum extent of operation of the unit.**

**From conversations with the 4843 AMSF operating personnel, the waste was stored**

| No. | Comments/Response | Concurrence |
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**on the loading pad located on the west end of the building. These were sealed containers that were included in the weekly inspections. As discussed in the response to Comment No. 3, there is no reasonable path for soil contamination to have occurred.**

**All potentially contaminated areas and equipment are currently identified in the closure plan. No additional equipment is dedicated for use in this unit. The areas located outside of the boundary specified in the closure plan are beyond the scope of the 4843 AMSF closure plan.**

**The information on the closure strategy is given in Section 6.0, and information on the closure activities and on the Decontamination Work Plan are given in Section 7.0.**

ECOLOGY COMMENT #2: Concur with the ten foot boundary from exterior walls of facility, upon review of all available aerial photographs and/or interviews with past waste management personnel.

**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comment has been closed and consolidated with Comment No. 5: No. 55 (General).**

**RL/WHC RESPONSE #2: Aerial photographs will be provided and will be made available at a future Unit Manager Meeting.**

6. ECOLOGY COMMENT #1: 2-2/38. Exhaust fans may have allowed contaminants to be dispersed to the external environment. This, along with the storage of waste outside the unit and the potential of residual spills of waste during loading and unloading, justifies soil sampling. — Closed per UMM of 9/8/93

Incorporate soil sampling into the plan as appropriate.

| No. | Comments/Response | Concurrence |
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**RL/WHC RESPONSE #1: The two spills reported at the 4843 AMSF consisted of *solid* sodium carbonate and sodium hydroxide leaking from containers. The Event Reports do not indicate any airborne radioactive contamination (both spills involved radioactive material). This indicates that no dust was generated by these spills. An examination of the physical properties of these two substances reveals that neither is a volatile. Therefore, the emission of a dust or a vapor from these incidents that would be dispersed to the external environment is nonexistent. The need to develop a soil sampling program based on this potential is, therefore, considered unnecessary.**

**Also, see responses to Comments Nos. 3 and 5.**

ECOLOGY COMMENT #2: Concur with the rationale that waste was probably not dispersed from exhaust fans, but soil sampling will be required within the ten foot boundary, addressed in previous comment/response.

**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 3.**

7. ECOLOGY COMMENT #1: 3-1. It is not clear if the spent piping and equipment containing waste was internally purged with inert gas before being sealed.

Elaborate on the management of the spent equipment. Specify if the equipment was purged before being sealed, if the equipment was containerized after being sealed, and if not containerized, was secondary containment utilized.

**RL/WHC RESPONSE #1: All spent piping and equipment is internally purged before being sealed inside the containers. Most spent piping and equipment are sealed inside of various DOT containers (identified in Table 3-1) with an inert gas atmosphere. In four cases involving radioactive mixed waste (item numbers 81, 82, 95, and 96), the sodium waste was sealed in the original equipment that had been purged with an inert gas atmosphere. For these four items, the sealed**

| No. | Comments/Response | Concurrence |
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**equipment is considered to be the container.**

**The requested information on past operations is included in Section 3.0. The description of procedures used for past operation of the 4843 AMSF will not be included and are beyond the scope of this closure plan.**

ECOLOGY COMMENT #2: The last paragraph of this response states, "past operation of the unit will not be included and are beyond the scope of the closure plan." This is an inappropriate response to the NOD. If past operations of this facility impact its closure, it is appropriate that such operations be evaluated for the purpose of decontamination and/or removal.

**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comment has been closed and consolidated with Comment No. 7: No. 8 (3-1/7).**

**RL/WHC RESPONSE #2: It is not clear why Ecology is requesting detailed information on past operations. It is not required by WAC 173-303-610 for closure purposes. None of the other closure plans prepared for the Hanford Site have included this information. For a Part B Permit Application, operational data is understood to be an integral part of the permit. Please provide a detailed explanation, with reference to regulations, of why this type of information is needed in a closure plan.**

8. ECOLOGY COMMENT #1: 3-1/7. Incorporate the QA/QC procedures for sealing spent equipment and drums. See previous comment. — Closed per UMM of 9/8/93

**RL/WHC RESPONSE #1: All container sealing was done at the point of waste generation prior to shipping the waste to the 4843 AMSF. As such, the sealing operation was not part of 4843 AMSF operations.**

**The requested information on past operations is included in Section 3.0. The**

| No. | Comments/Response | Concurrence |
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**description of procedures used for past operation of the 4843 AMSF will not be included.**

ECOLOGY COMMENT #2: Concur with omitting container sealing QA/QC for containers sealed before transport to the unit.

Second issue, see number 7.

**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 7.**

9. ECOLOGY COMMENT #1: 3-2/10-16. Section 3.2 discusses container management practices. Four parameters are said to be evaluated. The standard of evaluation is not provided.

Elaborate on the standards used (i.e. references used).

**RL/WHC RESPONSE #1: "Container condition" is a visual inspection of the container. It is visually inspected for change in shape, corrosion products, discoloration, or any other visual indications that the container has been damaged or breached.**

**The "container seal" is a visual check that the container seal is present and is intact (e.g., a gasket for a drum or that all openings in the equipment have been welded shut).**

**"Proper marking and labeling" would be determined by the requirements of Title 49, Code of Federal Regulations "Transportation" in effect at the time the waste was received at the 4843 AMSF.**

**"Valid radiological release" is applied to the container when it is removed from the radiation zone the waste was generated in. A radiological release sticker**

| No. | Comments/Response | Concurrence |
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must be present on the waste container and must be properly completed for the waste container to be accepted at the 4843 AMSF. The information on a radiological release includes the name of the Health Physics Technician, date, survey number, and count.

The information discussed above will be incorporated into the closure plan.

The requested information on past operations is included in Section 3.0. The description of procedures used for past operation of the 4843 AMSF will not be included.

ECOLOGY COMMENT #2: Concur with container inspection procedures. Also, within the text of paragraph 4 of the ninth response, numerically define an acceptable count for releasing containerized radiological wastes.

Last paragraph, see number 7.

RL/WHC RESPONSE #2: The purpose of the "valid radiological release" is to identify that there are no radiological concerns and, if there are, to identify the actual dose rate from the container (or other object). The dose rate is then the basis of how the container or object is dealt with. Also entering into this is the type of radionuclides present.

For the waste containers in 4843 AMSF, the maximum dose rate that would be acceptable is less than 200 millirem/hour at any point on the surface for a Contact Handled (i.e., physical contact by trained, authorized personnel is allowed) waste container of 55-gal or less. Larger containers could, but not necessarily would, have a localized area of up to 1,000 millirem/hour on the bottom or on one side. These represent the maximum limits defined in Section 4.6.1 of the *Hanford Site Solid Waste Acceptance Criteria* (WHC-EP-0063-3).

| No. | Comments/Response | Concurrence |
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**The containers in 4843 AMSF have maximum surface dose rates of less than about 100 millirem/hour. Generally, most containers have lower dose rates.**

10. ECOLOGY COMMENT #1: 3-2/36-40. Non-waste Na/K mixture is stored in this unit, yet the facility is described as having only two storage areas - one for hazardous waste and the other for mixed waste.

Discuss the dual function of the unit and any impact this may have on the closure. Discuss QA/QC procedures used to segregate mixed waste from hazardous waste, and waste material from product material.

**RL/WHC RESPONSE #1: Storage of the metallic sodium/potassium product mixture will not have any affect on closure. The product material was stored in special U.S. Department of Transportation shipping containers that have a stainless steel tank inside a wooden box. As such, they are easily recognizable. The waste containers are either drums, sealed piping, or other sealed containers with proper waste markings, including the hazardous waste label. Segregation was assured by the weekly visual inspection.**

**The requested information on past operations is included in Section 3.0. The description of procedures used for past operation of the 4843 AMSF will not be included.**

ECOLOGY COMMENT #2: The response does not address the NOD at hand. Photos of past waste/product storage configuration shown in Appendices E-5 and E-6 contradict the response provided. Photo (APP E-5) shows the product material stacked around the waste storage area. In the past product drums were very similar to waste drums, as depicted in Appendix E-5. The product is shown to be stored in drums which are not inside wooden boxes, which are the same as the waste drums, except they do not have hazardous waste stickers. The only apparent distinction between the drums is the hazardous waste sticker on the waste drums. Because it is not uncommon for drums to be mislabeled, it is possible for waste

| No. | Comments/Response | Concurrence |
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to be incorrectly managed.

Although this particular NOD does not request information on past operations, it should be noted that if past operations impact closure of the unit, it is appropriate to address such operations.

**COMMENT CONSOLIDATION:** As agreed at the Unit Managers' Meeting of September 8, 1993, the following comment has been closed and consolidated with Comment No. 10: No. 29 (7-3/46).

**RL/WHC RESPONSE #2:** There have been two basic storage configurations at the 4843 AMSF. Prior to November 9, 1987, drum racks for storage of product (non-waste) were located on the north and east walls. The radioactive mixed waste containers were stored in the center of the building. Concrete block walls (dry stacked without mortar and about 4 feet high) were located on the east, north, and west sides of the radioactive mixed waste storage area for radiation protection purposes. The dangerous waste was stored along the south wall. Proper management was assured by weekly inspections and by segregation of waste.

The large quantity of product material (lithium, sodium, sodium-potassium) shown in Figure E-5 was removed before November 9, 1987. By November 9, 1987, the product racks were removed and the storage configuration modified. Dangerous waste continued to be stored along the south wall, the east wall south of the rollup door was used for very limited amounts of product storage, radioactive mixed waste was stored between a line running approximately from the north edge of the rollup doors to the north wall.

Due to the presence of radioactive material, Health Physics Technicians would have been present to perform radiological surveys as necessary during the modification to the storage configuration in the 4843 AMSF.

The closure plan will be modified to include the information on the past storage

| No. | Comments/Response | Concurrence |
|---|---|---|

**configuration.**

11. ECOLOGY COMMENT #1: 4-1/10. This sentence refers to Appendix C. See comments on Appendix C.

Closed per UMM of 9/8/93

**RL/WHC RESPONSE #1: See response to Comment No. 45.**

ECOLOGY COMMENT #2: See number 4.

**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 4.**

12. ECOLOGY COMMENT #1: 4-1/28. Segregation of waste is based on the radioactivity of the waste.

Provide a detailed discussion of procedures taken to assure and maintain segregation of mixed and dangerous waste.

**RL/WHC RESPONSE #1: The waste is segregated upon arrival at the 4843 AMSF. Segregation is based upon the labeling of the waste container with a radioactive material label upon generation. The presence of these labels was verified by the weekly inspections. Also, the monthly radiation surveys checked all containers. Detecting radiation from a non-radioactive waste container would have generated an event fact sheet. No such events occurred at the 4843 AMSF.**

**The above information will be added to the closure plan.**

**The requested information on past operations is included in Section 3.0. The description of procedures used for past operation of the 4843 AMSF will not be included.**

ECOLOGY COMMENT #2: Concur with the addition of the information provided in the

| No. | Comments/Response | Concurrence |
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response to the closure plan. Due to the monthly radiation survey schedule, there is a question whether the waste stored less than a month could be received into and shipped out of the unit without a survey having been conducted. Please clarify if wastes were surveyed (radiological) coming into and out of the facility.

Last paragraph of the response, see number 7.

**RL/WHC RESPONSE #2: Standard practice at the Hanford Site would require Health Physics Technician (HPT) coverage for radiological surveys during any movement of material into or out of the 4843 AMSF. The HPT coverage is required because the 4843 AMSF is a radiological controlled area (RCA) containing a radiation zone. The requirement for HPT coverage (i.e., radiological survey) would apply to both radiological and non-radiological material entering or leaving the 4843 AMSF.**

13. ECOLOGY COMMENT #1: 4-2/1. The text states that records of laboratory analysis of waste samples are maintained at the 340 Facility and Tanker. — Closed per UMM of 9/8/93

Was analysis conducted on spilled material to determine the composition of compounds formed? If so, provide analytical records. If not, provide a detailed discussion of how the conclusion was reached. If it cannot be substantiated that carbonates are the only product of this reaction, sampling for both hydroxides and carbonates will be required.

**RL/WHC RESPONSE #1: Analytical tests were not performed on the limited amounts of the spilled material. The closure plan will be modified to address both hydroxides and carbonates.**

ECOLOGY COMMENT #2: Concur with response to account for hydroxides and carbonates in the closure plan, but analysis will not be limited to these substances. The closure must account for wastes associated with the life and operation of the facility.

| No. | Comments/Response | Concurrence |
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| | **RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.** | |
| 14. | ECOLOGY COMMENT #1: 4-2/23. There is question about the actual composition of spilled waste, once reacted with its ambient environment. The text states "Carbonates are the only products considered to be produced from the reaction of the metal wastes with air." Support for this conclusion is not provided. This determination is contradicted by spill reports and later sections of the closure plan. One of the spill reports submitted with the closure plan states that Sodium Hydroxide (NaOH) was formed when the waste reacted with moisture in the atmosphere. Also, during a walk-through of the unit, it was again stated that NaOH was formed when wastes were spilled.<br><br>Discuss the chemical/physical properties that govern the outcome of the reacting. Justify not considering other potential products. Provide supporting facts, references and/or analytical records. See previous comment.<br><br>**RL/WHC RESPONSE #1: See response to Comment No. 13.**<br><br>ECOLOGY COMMENT #2: See previous comment. *[Comment No. 13]*<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.** | Closed per UMM of 9/8/93 |
| 15. | ECOLOGY COMMENT #1: 6-1/18. Ambiguous terms such as, "potentially dangerous" and "action levels" are not appropriately defined for the function of this document. The removal or decontamination of waste residues, equipment, soils, or other materials contaminated with dangerous waste or dangerous waste residue must not exceed background environmental levels for listed or characteristic wastes or designation limits for state only waste (WAC 173-303-610(2)(b).<br><br>Modify text to include background as the clean closure performance standard. | |

| No. | Comments/Response | Concurrence |
|---|---|---|

Replace ambiguous terms, or define them in reference to the regulation cited above. Citations of health-based standards must be changed to background. Correlate the term "action level" with the clean closure requirements.

**RL/WHC RESPONSE #1: The text will be changed to remove the term potentially and insert waste to read "... dangerous waste constituents..." to remain consistent with the rest of the document. The remainder of the text will remain unchanged.**

**In a letter from Ecology (Roger Stanley) dated 2/4/92, addressed to all interested parties, three Cleanup/Remediation options were presented as acceptable options for Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response Compensation and Liability Act activities on the Hanford Site. In this letter, options in addition to cleanup to background levels were addressed. In light of this, the use of health based action levels as a standard for closure of RCRA units has been proposed on the Hanford Site and is being looked at in earnest by Ecology. Therefore, the use of the term "action levels" in closure plans has become common syntax and has up to this point been accepted by Ecology.**

**The definition of "action level" for this closure plan is given on page 6-1, lines 7-8 and also on page 6-2, line 33. The text will be modified to include the definition.**

ECOLOGY COMMENT #2: Concur with first paragraph of the response.

The second paragraph of the 2/23/93 response states that the definition of "action level" for this closure plan is provided on page 6-1, lines 7-8. The referenced statement reads, "these standards will be achieved by removing dangerous waste from the 4843 AMSF and decontaminating to levels protective of human health and the environment..." This statement is consistent with the closure performance standards of WAC-173-303-040. However, neither WAC 173-303-040, nor proposed WAC 173-303-610(2) (to incorporate provisions of

| No. | Comments/Response | Concurrence |
|---|---|---|

WAC 173-340-200) provide a definition for "action level."

On page 6-2, line 33, "action level" is defined as a concentration that prompts "an action." This statement could be interpreted as being consistent with the closure performance standard statement on page 6-1, lines 7-9. Although on page 6-2, lines 34-35, the action level for the metal surfaces is defined as "the limit of quantitation of the wipe sample method." Without identifying which particular analytes or analytical methods are to be utilized, the limit of quantitation cannot be established. Similarly, on page 6-2, lines 35-44, the action level for the concrete floor is proposed to be based on WAC 173-303-084, "Dangerous Waste Mixtures." Again, without including all applicable parameters and not identifying the corresponding analytical methods, appropriate "action levels" cannot be established. To avoid any further confusion on this subject, delete all "action level" references and phrases. It is recommended that after the waste characteristics of Chapter 4.0 are properly identified, the sampling and verification parameters and the analytical methods be re-evaluated and revised as appropriate. In addition, for simplicity, it is requested that a table be inserted into the plan which identifies parameters/analytes, detection levels, practical quantification levels, and corresponding analytical methods that the various medias will be sampled for. Another table to address analyte specific "cleanup levels" (as defined by WAC 173-340-200) for the various media should be considered for inclusion, if applicable.

**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comments have been closed and consolidated with Comment No. 15: No. 23 (6-1/13), No. 24 (6-2/11), and No. 25 (6-2/33-35).**

**RL/WHC RESPONSE #2: The term 'action levels' will continue to be used in this and all other closure plans. The definition of 'action level' is the concentration of contaminate that requires cleanup activity when that concentration is greater than some predetermined level (e.g., site-wide background, health-based level, or the limit of quantitation.) This definition**

| No. | Comments/Response | Concurrence |
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| | **will be included in the closure plan where appropriate.**<br><br>**A table will be added to Section 7 that identifies constituents, parameters, and analytical method for specific media (e.g., concrete). Also, a table will be added that identifies the constituents of concerns and the respective action level.** | |
| 16. | ECOLOGY COMMENT #1: 6-1/22. The text states that no post closure activities are expected. No discussion is provided to support this decision.<br><br>Elaborate on why post closure will not be necessary, and explain standards used in the determination.<br><br>**RL/WHC RESPONSE #1: The text will be modified to state that the 4843 AMSF is expected to be clean closed. Therefore, no post closure activities are expected.**<br><br>ECOLOGY COMMENT #2: Concur. | Closed by Ecology NOD Response Table of 7/20/93 |
| 17. | ECOLOGY COMMENT #1: 6-1/26-30. Again, explain why carbonates are considered the only possible reaction products.<br><br>See comment number 14.<br><br>**RL/WHC RESPONSE #1: See response to Comment No. 13.**<br><br>ECOLOGY COMMENT #2: Concur.<br><br>In response to second paragraph of response, see comment number 13.<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.** | Closed per UMM of 9/8/93 |

| No. | Comments/Response | Concurrence |
|---|---|---|
| 18. | ECOLOGY COMMENT #1: 6-1(*sic*)/34. [6-2/34.] The sentence reads, "[t]he action level of the metal surfaces (walls) is the limit of quantitation of the wipe sample method".<br><br>First, provide reference or detailed description of sample method used. Second, define the "quantitation limit" and state what it is for specific analytes. Action levels must be adequately defined.<br><br>**RL/WHC RESPONSE #1: The reference for the sample method is *A Compendium of Superfund Field Operation Methods* (EPA/540/P-87/001). A description of the method is contained in Section 7.3.2. Since wipe sampling only provides a qualitative estimate of contamination, the text is in error and will be changed.**<br><br>ECOLOGY COMMENT #2: Concur. | Closed by Ecology NOD Response Table of 7/20/93 |
| 19. | ECOLOGY COMMENT #1: 6-1/35-36. The closure plan does not describe methods employed for removing contaminants from the unit.<br><br>Provide a detailed description of procedures utilized to remove contaminants. Be explicit.<br><br>**RL/WHC RESPONSE #1: The intent of Section 6 is to provide the general outline for closure. More detailed information is not appropriate. Section 7.4 of the closure plan, "Decontamination and Disposal of Building and Concrete Pad," discusses the decontamination strategy for clean closure.**<br><br>ECOLOGY COMMENT #2: Concur. | Closed by Ecology NOD Response Table of 7/20/93 |
| 20. | ECOLOGY COMMENT #1: 6-1/37. This sentence refers to Appendix D.<br><br>See comment number 14. | Closed per UMM of 9/8/93 |

| No. | Comments/Response | Concurrence |
|---|---|---|

**RL/WHC RESPONSE #1: See response to Comment No. 13.**

ECOLOGY COMMENT #2: Concur.

In response to second paragraph of response, see comment number 13.

**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.**

21. ECOLOGY COMMENT #1: 6-1/40-46. Because wastes were externally stored, sampling and analysis outside the unit will be required. — Closed per UMM of 9/8/93

Modify text accordingly.

**RL/WHC RESPONSE #1: See response to Comment No. 3.**

ECOLOGY COMMENT #2: See RL/WHC response to comment 5. The closure plan states that the boundary of the unit is ten feet from the exterior walls of the building. Therefore, soil sampling within this boundary is appropriate. Modify text accordingly.

**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 3.**

22. ECOLOGY COMMENT #1: 6-2/7-10. The detail of this section is insufficient.

Explain how and where the waste will be removed. Describe or reference sampling, analysis, and decontamination procedures.

**RL/WHC RESPONSE #1: The radioactive mixed waste will be moved to the Hanford Mixed Waste Complex for long-term storage. The radioactive mixed waste will remain at the Hanford Site in the 200 West area for the present time. The**

| No. | Comments/Response | Concurrence |
|---|---|---|

**dangerous waste has been transferred offsite to a licensed hazardous waste facility for disposal.**

**Relative to the details of decontamination, see response to Comment No. 19.**

**The contents of Section 6.2 is considered to be adequate and will not be changed.**

ECOLOGY COMMENT #2: The information provided in this response is not contained in the closure plan. Modify text to incorporate information into appropriate sections of the plan. It should be noted that the comment pertains to wastes generated during closure activities and the response addressed wastes in storage.

**RL/WHC RESPONSE #2: The purpose of Section 6 of the closure plan is to outline the closure strategy and performance standards. The detailed information being requested in both Ecology comments is appropriate in either Section 7 or in the Decommissioning Work Plan. It is not consistent with the current closure plan format to include that level of detail in Section 6. As part of Revision 1 of the closure plan, Section 6 will be modified to bring it up to current standards of information, but it will not contain detailed methodology. That information is covered in Section 7 and in the Decommissioning Work Plan.**

23. ECOLOGY COMMENT #1: 6-1/13. Decontamination of building equipment below action levels is specified as the second step in the closure activities. — Closed per UMM of 9/8/93

The first comment associated with these activities evolved out of a tour of the unit on October 5, 1992. During the tour, loading/unloading practices were discussed. It was stated that a forklift was used to move pallets of waste drums, however, the lift was not present during the tour. Provide a list of equipment utilized in the operation or closure of the unit in the closure plan, and a detailed discussion of decontamination or disposal of equipment associated with the unit.

| No. | Comments/Response | Concurrence |
|---|---|---|
| | Again, "action levels" are not adequately defined and therefore are not appropriate for the closure plan. See comment *[No. 15]* regarding 6-1/18.<br><br>**RL/WHC RESPONSE #1: No forklifts are dedicated for use at or stored in this unit. Due to the containerized nature of the waste that was stored in this unit, any forklifts or other equipment used in this unit would only become contaminated in the event of a release or spill of waste. Neither of the releases of waste occurring in the 4843 AMSF involved forklifts, other equipment, or load/unloading operation. Because no material handling equipment was considered to be part of the unit, such equipment is not addressed by the closure plan.**<br><br>**See the response to Comment No. 15 for "action levels."**<br><br>ECOLOGY COMMENT #2: Concur with first paragraph of response.<br><br>See number 15 to address second paragraph of response.<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 15.** | |
| 24. | ECOLOGY COMMENT #1: 6-2/11. Action levels are not adequately defined. See comment number 14.<br><br>**RL/WHC RESPONSE #1: See response to Comment No. 15.**<br><br>ECOLOGY COMMENT #2: See number 15.<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 15.** | Closed per UMM of 9/8/93 |
| 25. | ECOLOGY COMMENT #1: 6-2/33-35. Action levels are not adequately defined. Compliance with regulatory requirements is not discussed, nor is the wipe sample | Closed per UMM of |

| No. | Comments/Response | Concurrence |
|---|---|---|

method appropriately defined, referenced or adequately explained. 9/8/93

See comment regarding 14.

**RL/WHC RESPONSE #1: For action levels, please see Comment Response No. 15. The wipe sample method is referenced in Section 7.3.2.**

ECOLOGY COMMENT #2: See number 15.

**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 15.**

26. ECOLOGY COMMENT #1: 6-2/35-39. The intent of this sentence is unclear. Is it that the concrete floor is being considered a component of the mixture for designation purposes?

The floor cannot be considered a component of the waste unless it is intended to remove the entire floor and dispose of it as dangerous waste. It appears the floor is not intended to be waste, therefore it can not be considered when designating the concentration of the waste. See WAC 173-303 for designation procedures. The mixture rule does not apply to the concrete floor. Refer to WAC 173-303-610 for decontamination guidance.

Any sodium hydroxide or carbonate embedded in the floor needs to be sampled and compared with the background concentration in the clean concrete it is adhered to.

**RL/WHC RESPONSE #1: The floor is not being considered a component of the mixture for designation purposes. The text will be modified to clarify this point.**

**Sampling concrete to determine background levels has not been feasible due to the variability in the composition of concrete from the chemical constituents in the**

| No. | Comments/Response | Concurrence |
|---|---|---|

**aggregate, additives, and cement. The Toxic Characteristic Leachate Procedure (TCLP) will be used for inorganic analysis. This method is most likely to dissolve only those constituents that could mobilize in a landfill environment without dissolving the concrete itself. The justification for using TCLP for inorganic analysis in concrete is attached to the NOD response table.**

ECOLOGY COMMENT #2: Concur with first paragraph of response.

Addressing the second paragraph of the response, the discussion of concrete composition variability as presented in the attachment to the 2/23/93 response table is accepted as valid. The proposal to utilize the Toxic Characteristic Leachate Procedure (TCLP) solely as a measure of decontamination verification is inappropriate. The purpose of the TCLP as it occurs in WAC 173-303-090 is to determine if the waste is dangerous waste by the characteristic of toxicity after it has been determined, not to be designated as a dangerous waste under any of the dangerous waste lists identified by WAC 173-303-090(8)(b). It should be noted that contaminants can be detected several magnitudes above background and may not leach using the TCLP. For this reason, these concentrations, if left in the environment, may be deleterious to the environment or human health. Therefore, the proposal to utilize TCLP for decontamination verification in the second paragraph of the response table cannot be approved.

Addressing clean closure verification in regard to the concrete, several sampling approaches should be considered. The establishment of background for the concrete taking the variables as identified in the discussion of concrete composition variability, as presented in the attachment to the February 23, 1993 response table, into consideration is the approach as specified by WAC 173-303-610. If this approach is deemed not to be feasible, a combination of analytical methods whereby total metals analysis (using the hot acid leach method), TCLP analysis, and rat and fish bioassays are conducted and evaluated, should be considered. Another approach to be considered is that of utilizing cleanup levels established by proposed WAC 173-303-610 (scheduled to be

| No. | Comments/Response | Concurrence |
|---|---|---|

promulgated in December 1993 to amend WAC 173-303-610 to include WAC 173-340-200) whereby those cleanup levels specified in proposed WAC 173-340-740 for soils may be applied to concrete. Revision 1 of the closure plan should identify exactly which standards are to be utilized.

**RL/WHC RESPONSE #2: The current intention is to use the step-wise Hot Acid Leach-Total Metals Analysis/Toxic Characteristic Leaching Procedure/Rat and Fish Bioassay Methodology for the analysis of inorganics in concrete. This methodology was presented by Ecology at the Unit Managers' Meeting on February 10, 1993, for the *303-K Radioactive Mixed Waste Storage Facility Closure Plan.* The methodology was identified by Ecology as the state-wide standard methodology for inorganics in concrete.**

**The closure plan will be modified to incorporate the previously stated methodology where appropriate.**

27. ECOLOGY COMMENT #1: 7-3. Section 7.3.3 describes procedures for taking concrete samples of the floor, but does not address the rubber seams in the floor. Seams and joints in an old facility provide a pathway to the environment. They should be treated in a similar manner for sampling. No discussion of other potentially contaminated items is provided.

The plan must identify the equipment or structures that will require decontaminating at closure, including floors and walls of the building, unit parking lots, roads, truck staging areas, structures associated with the unit, and trucks and heavy equipment, such as forklifts. Provide additional sampling, similar to that being done for cracks, or provide detailed justification for the proposed sampling method.

**RL/WHC RESPONSE #1: Construction drawing FSK-70E-164 located in Appendix B identifies the cracks in the concrete under note 3 to be constructed to the following parameters:**

| No. | Comments/Response | Concurrence |
|---|---|---|

"Saw cut 1/8 inch wide X 3/4 inch deep or keyed construction joints"

Whether they are constructed joints, or as a result of keying (which would have been accomplished by laying small wooden or metallic keys after pouring and then removing the keys after a short period of curing). The joints, when constructed, did not penetrate the foundation slab completely. These joints do not provide a pathway to the environment since the concrete thickness is a minimum of 6 inches. The opportunity for any waste to reach these is nonexistent since no free liquids have been stored in the unit and all spills are reported as having involved solids as is noted in Appendix D. No text change required.

The 4848 Building as described in the closure plan is the only structure potentially requiring decontamination. Any other structures, equipment, or physical plant (i.e., roads, staging areas, etc.) is beyond the scope of the 4843 AMSF Closure Plan.

As discussed in the response to Comment No. 3, the waste material that was stored in the 4843 AMSF was a solid reactive material stored in sealed containers. Only two minor releases of solid (i.e., non-liquid) waste by-products have occurred. No free liquids were present in this unit. Because of these factors, the seams in the concrete floor are not considered to be likely pathways for contamination.

ECOLOGY COMMENT #2: The purpose of a saw-cut or a strip of material embedded in a concrete slab is to create a relief joint. Relief joints are used to control cracking in concrete by creating a fault line for the cracks to follow. They do not in any way prevent cracking or prevent complete penetration of cracks. Therefore, revise text accordingly.

**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comments have been closed and consolidated with Comment No. 27: No. 78 (2-2/33-35 and 7-3/44-46) and No. 79 (7.3.3).**

| No. | Comments/Response | Concurrence |
|---|---|---|

**RL/WHC RESPONSE #2: Efforts will be made to identify the joint type and the appropriate descriptions will be included in the text replacing the descriptions on page 2-2, lines 33 to 35 and page 7-3, lines 44 to 46. The changes will include discussion on any cracks in the joints.**

28. ECOLOGY COMMENT #1: 7-3/9. Because not all of the waste was mixed waste, using radiation surveys to determine locations to collect samples is not sufficient verification, nor is limiting sampling to rusted or stained areas.

Samples will need to be collected and analyzed that will depict the condition of the entire facility.

**RL/WHC RESPONSE #1: As discussed in the responses to Comments Nos. 3 and 27, all the waste material consisted of solid materials stored in sealed containers, no free liquids were present, and neither spill of solid material contaminated the walls.**

**Due to the nature of the waste stored in the 4843 AMSF, radiation surveys and visual inspection of the surfaces are considered ample to identify those points where contamination is the most likely to be present. The wastes stored in this unit are characteristic wastes. If they ever came into contact with any part of the unit, a trace of either the radioactivity (if the waste was mixed) or the reactive or corrosive nature of the waste would pinpoint its location (i.e., discoloration or corrosion of the surface). Therefore, the use of radiation surveys and visual inspection of the unit interior is judged adequate for determining sampling location. The use of visual inspections for selection of sample points was the primary method used for the closure of the 2727-S Facility, a similar unit.**

**Because of the nature of waste storage and handling, contamination of the walls is considered to be unlikely. For the type of waste stored in this unit, the wall sampling as described in the closure plan is adequate.**

| No. | Comments/Response | Concurrence |
|---|---|---|

ECOLOGY COMMENT #2: It is appropriate to use bias sampling (visual inspection and radiation survey) to locate suspect contamination within a unit. But it is not adequate to limit sampling to these areas for clean closure verification. Even though contamination of the walls is unlikely, it is not impossible. Therefore, random sampling of the walls will be required. Also, during a July 9, 1993 site visit, the insulation covered wall located above the sheet metal was noted to be torn/ruptured in many places. As drums were stacked three drums high, it is appropriate to verify clean closure of the walls above the sheet metal. The closure plan addresses only the sheet metal and should also include a description of how decontamination verification samples above the sheet metal will be collected.

Addressing the second comment of the response, the request is inconsistent with what was allowed in the 2727-S Facility closure. It should be noted that at this time, the referenced unit is known to have very little in common with the 4843 AMSF storage unit. During closure activities, if it is found that 4843 AMSF presents similar challenges to those of 2727-S, the additional information will be evaluated accordingly. Otherwise, biased and random sampling will be utilized. It is unfortunate that all units are not able to be managed consistently. Due to the unique nuances of each unit, and the perspective of the unit manager, it is a fallacy to assume that blanket site wide approval has been provided because a procedure, interpretation, or guidance has been provided by one regulator at one unit. Furthermore, during a project manager's meeting, it was decided that what is done at one unit may not appropriately be implemented at another unit. In other words, the actions taken at one unit do not set a precedent for all other *RCRA* units.

**RL/WHC RESPONSE #2: As discussed previously, there is no reasonable pathway for either alkali metal waste or its by-products to contaminate the walls. These are solid pyrophoric metals in sealed containers. It is not possible for the alkali metal to 'escape' from the containers without their visible corrosion by-products or metal fire occurring. For these reasons, wipe sampling of the metal**

| No. | Comments/Response | Concurrence |
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| | **wall surfaces only is adequate.** | |
| 29. | ECOLOGY COMMENT #1: 7-3/46. The text states that the unit is divided by a rope into two storage areas, but section 3.0 indicates that Na/K product was stored in the facility.<br><br>Discuss the dual function of the unit. See comment number 10.<br><br>**RL/WHC RESPONSE #1: See response to Comment No. 10.**<br><br>ECOLOGY COMMENT #2: See comment number 10.<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 10.** | Closed per UMM of 9/8/93 |
| 30. | ECOLOGY COMMENT #1: 7-4/1. See comment number 14.<br><br>**RL/WHC RESPONSE #1: See response to Comment No. 13.**<br><br>ECOLOGY COMMENT #2: See comment number 13.<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.** | Closed per UMM of 9/8/93 |
| 31. | ECOLOGY COMMENT #1: 7-4/9. Many distinct procedures are compiled into SW-846. Specific procedures used should be referenced by number, and any alteration of procedures require prior regulatory approval.<br><br>Specifically describe "the protocol" used. It is suggested that a grid pattern of the unit, inside and out, be implemented for sampling utilizing both stratified random and biased sampling methods. | |

| No. | Comments/Response | Concurrence |
|---|---|---|

**RL/WHC RESPONSE #1: A reference to Appendix G will be added to identify the SW-846 protocols being used.**

**The sampling for the floor of the building is considered to be adequate and is discussed in Figure 7-2 on page F7-2 and in Table 7-1 on page T7-1.**

**For soil sampling, see the response to Comment No. 3.**

**Clarification is requested on the definition of "stratified random" sampling.**

ECOLOGY COMMENT #2: Concur with the addition of a reference to appendix G to identify SW-846 protocols being used.

Specify why the number of samples (seven) proposed for the floor sampling is considered adequate. Has the number been based on a statistical goal to achieve a particular confidence interval?

Stratified sampling consists of taking samples at various depths/distances or geographical locations.

**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comment has been closed and consolidated with Comment No. 31: No. 42 (F7-2).**

**RL/WHC RESPONSE #2: For sampling purposes, the floor surface is divided into 1 $m^2$ grids. For 4843 AMSF, there are 144 squares in a 12 by 12 pattern (see Figure F7-2, page F7-2). To obtain representative and statistically significant samples, 5 percent of the grids must be sampled. This results in sampling of 7 grids (144 x 0.05). The 5 percent area requirements is a standard number for sampling flat surfaces and is based on U.S. Environmental Protection Agency (EPA) guidelines. The text of the closure plan will be modified to identify that the 7 samples represent 5% of the surface area.**

| No. | Comments/Response | Concurrence |
|---|---|---|

32. ECOLOGY COMMENT #1: 7-4/14-31. See comment number 26.

**RL/WHC RESPONSE #1: See response to Comment No. 26.**

ECOLOGY COMMENT #2: Please indicate, in response, that text of page 7-4, lines 14-31, will be modified to delete references to WAC 173-303-084 for decontamination verification of the concrete.

**RL/WHC RESPONSE #2: The text on page 7-4, lines 11 to 31 reading "Unlike the metal walls, the possibility...in accordance to WAC 173-303-084(5)(b)." will be deleted. A complete rewrite of the section will be substituted. A draft of the rewrite is provided as follows:**

**"Unlike the metal walls, the possibility exists that contaminants have penetrated and embedded in the concrete floor. Therefore, verification is necessary to ensure that any contaminants embedded in the floor are below the action levels presented in Table *to be determined (TBD)*.**

**To obtain statistically significant and representative samples, 5% of the surface area of the floor need to be sampled. This requires 7 of the grids shown in Figure 7-2 to be sampled. The 7 concrete floor samples will be taken from the locations identified in Figure 7-2. These locations are selected by the results of random number generation (Table 7-1). These samples will be taken by concrete chipping.**

**Authoritative concrete samples will be taken of the cracks in the concrete floor as shown in Figure TBD. These samples will be taken by concrete coring.**

**The concrete samples collected will be analyzed for the contaminants identified in Table TBD. These inorganic contaminants will be analyzed**

| No. | Comments/Response | Concurrence |
|---|---|---|
| | **using the Hot Acid Digestion-Toxic Metals/Toxic Characteristic Leaching Procedure methodology, as shown in Table TBD."** | |
| 33. | ECOLOGY COMMENT #1: 7-4/50. Laboratory procedures are cited in this sentence.<br><br>Specify that the current version of referenced material will be used.<br><br>**RL/WHC RESPONSE #1: The Quality Assurance Project Plan (Appendix G) requires that the most current version of all Environmental Investigation and Instructions are to be used. The text will be modified so that the current version of the referenced material will be used.**<br><br>ECOLOGY COMMENT #2: Concur. | Closed by Ecology NOD Response Table of 7/20/93 |
| 34. | ECOLOGY COMMENT #1: 7-5/40-48. This section is ambiguous.<br><br>Elaborate on the actual procedures or simply reference the procedures and submit a copy of the QA/QC manual with the closure plan for review and approval.<br><br>**RL/WHC RESPONSE #1: The analytical laboratory quality control/quality assurance (QA/QC) procedures are beyond the scope of this closure plan and will not be provided. Regulatory review and oversight of the analytical procedures are covered in the Hanford Federal Facility Agreement and Consent Order (Article XXX). For information relative to this closure plan, see the quality assurance program plan (QAPP) in Appendix G.**<br><br>**The selection of an analytical lab is not undertaken until shortly before sampling begins; in general, the lab can be expected to follow the QA/QC outline of SW-846 for RCRA analysis.**<br><br>ECOLOGY COMMENT #2: Concur with inclusion of provision to submit laboratory certification that SW-846 laboratory QA/QC procedures were utilized. | |

| No. | Comments/Response | Concurrence |
|---|---|---|
| | **RL/WHC RESPONSE #2: Such a provision is not required and will not be added. As stated, laboratory certifications are covered in the *Hanford Federal Facility Agreement and Consent Order* and are outside of the scope of the closure plan.** | |
| 35. | ECOLOGY COMMENT #1: 7-6/7. It is unclear if an EII is being referenced.<br><br>Clarify whether the exact EII method will be used (i.e. incorporate method by reference) or whether the method is only similar to an EII, in this case.<br><br>**RL/WHC RESPONSE #1: This sentence is clearly referencing the EII. Modification of the sentence is not considered necessary.**<br><br>ECOLOGY COMMENT #2: It is suggested that "in accordance with EII .." be inserted into the sentence.<br><br>**RL/WHC RESPONSE #2: The text will be modified as requested.** | |
| 36. | ECOLOGY COMMENT #1: 7-6/27-31. It is not clear who is responsible for reviewing and evaluating the reports.<br><br>Specify to whom the reports will be submitted.<br><br>**RL/WHC RESPONSE #1: The text will be modified to identify that the Field Team Leader and the Hanford Technical Lead are responsible for this reporting.**<br><br>ECOLOGY COMMENT #2: Concur. | Closed by Ecology NOD Response Table of 7/20/93 |
| 37. | ECOLOGY COMMENT #1: 7-7/33-34. It is premature to assume that sampling will be limited to the media specified. Because waste has been stored outside the unit, soil sampling will be required.<br><br>Provide procedures for soil sampling and analysis. | Closed per UMM of 9/8/93 |

| No. | Comments/Response | Concurrence |
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| | **RL/WHC RESPONSE #1: See response to Comment No. 3.** | |
| | ECOLOGY COMMENT #2: See comment number 3 and number 5. | |
| | **RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 3.** | |
| 38. | ECOLOGY COMMENT #1: 7-7/33. Soil sampling will need to be integrated into the sampling and analysis. See comments number 3 and 5. | Closed per UMM of 9/8/93 |
| | **RL/WHC RESPONSE #1: See response to Comments Nos. 3 and 5.** | |
| | ECOLOGY COMMENT #2: See comment number 3 and number 5. | |
| | **RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 3.** | |
| 39. | ECOLOGY COMMENT #1: 7-9/3-24. The contents of section 7.4 are inadequate. The decommissioning work plan must be submitted to allow the procedure to be evaluated as part of the closure. | |
| | **RL/WHC RESPONSE #1: The work plan will be written just prior to the start of decontamination operations. A copy of the decommissioning work plan will be provided on an information only basis to Ecology. The decommissioning work plan will specify the details for field implementation of the closure activities described in Section 7.0.** | |
| | **After reviewing Section 7.4, it has been determined that this section will be rewritten and expanded.** | |
| | ECOLOGY COMMENT #2: The work plan will need to be incorporated into the closure plan. | |

| No. | Comments/Response | Concurrence |
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The "decommissioning work plan" procedures as referenced on page 7-9, Section 7.4, are required to be detailed within the closure plan. Again, as the document is a stand alone document, the inclusion of a description of decontamination procedures within the closure plan is required by WAC-173-303-610(3)(v). In addition, the Washington State Department of Ecology's "Guidance for Clean Closure of Dangerous Waste Facilities" (Draft) dated April 1993 recommends that at the start of closure, all surface areas be visually inspected for cracks and other openings through which washing fluid may reach the environment. The guidance recommends that all identified cracks or openings be sealed with a sealant resistant to both water and any cleanser designated for use in the area. During a July 9, 1993 site visit, it was noted that the unit does not have a containment system. The decommissioning work plan procedures should identify what provisions will be made to prevent washing fluid, sandblasting sand, etc., from reaching the environment.

Concur with the revision of Section 7.4.

**RL/WHC RESPONSE #2: Additional detail will be added to Section 7 and Section 7.4 in particular. The Decommissioning Work Plan will be written prior to the start of decontamination operations and will be issued separately from the closure plan. A copy of the Decommissioning Work Plan will be provided to Ecology on an information-only basis. The Decommissioning Work Plan will specify the details for field implementation of the closure activities described in Section 7.**

**Per the *Hanford Federal Facility Agreement and Consent Order*, the closure plans are part of the administrative record. It is appropratae for the closure plan to reference the other documents. The admnistrative record provides the overall detail required to document all activities associated with closure.**

40. ECOLOGY COMMENT #1: 7-9/29. Insufficient information is provided to determine if the schedule for closure is reasonable. This is also inconsistent with the regulatory time frame allowed by the Dangerous Waste Regulations.

| No. | Comments/Response | Concurrence |
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A schedule for closure must include, at a minimum, the total time required to close each dangerous waste management unit and the time required for intervening closure activities which will allow tracking of the progress (WAC 173-303-610(3)(a)(vii). A discussion of the time line provided on F7-3 will help.

**RL/WHC RESPONSE #1: The estimated time for each closure activity is clearly presented in Figure 7-3 and called out in the document. Restating these time frames in the text is considered unnecessary.**

**Also see response to Comment No. 39.**

ECOLOGY COMMENT #2: While the estimated time for each closure activity is clearly presented in Figure 7-3, it appears that only one round of decontamination sample verification is anticipated. In contrast, Figure 7-1, indicates that the sampling flow path anticipates or allows for two rounds of decontamination sample verification in addition to removal of contaminated sections of the building. Verify if the scenario of Figure 7-1 occurred, whether or not closure could be conducted within 180 days.

**RL/WHC RESPONSE #2: If the second round of sampling is required, it is possible that the closure activities could exceed 180 days and require an extension per WAC 173-303-610(4). The need for an extension would depend on the extent and scope of the additional sampling. The extra sampling step is included to ensure that sufficient funding and resources are available if need. The closure plan will be revised to include this information.**

41. ECOLOGY COMMENT #1: F7-1. Incorporate soil sampling and analysis into the flow diagram. — Closed per UMM of 9/8/93

**RL/WHC RESPONSE #1: See response to Comment No. 3.**

| No. | Comments/Response | Concurrence |
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| | ECOLOGY COMMENT #2: See comment number 3 and 5.<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 3.** | |
| 42. | ECOLOGY COMMENT #1: F7-2. The sampling locations presented here are inadequate. The locations do not appear capable of providing unbiased results representing the entire floor.<br><br>The sampling locations of the floor need to be more appropriately distributed. Provide figures indicating the locations for wall and soil samples. See comment number 31.<br><br>**RL/WHC RESPONSE #1: The sampling of the floor meets the requirements of SW-846 for random sampling. The idea of selecting samples at random is so that the sample locations are as unbiased as possible. This unbiased method of sampling is included in other closure plans which are nearing final approval by Ecology.**<br><br>**For sampling of the walls, see response to Comment No. 28. For soil sampling, see response to Comment No. 3.**<br><br>ECOLOGY COMMENT #2: See comment number 31 regarding the number of random samples proposed. Concur with random sampling logic.<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 31.** | Closed per UMM of 9/8/93 |
| 43. | ECOLOGY COMMENT #1: F7-3. Incorporate soil sampling.<br><br>**RL/WHC RESPONSE #1: See response to Comment No. 3.**<br><br>ECOLOGY COMMENT #2: See comment number 3 and 5. | Closed per UMM of 9/8/93 |

| No. | Comments/Response | Concurrence |
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| | **RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 3.** | |
| 44. | ECOLOGY COMMENT #1: 8-1/52. Specify the agencies that will file the survey plat.<br><br>**RL/WHC RESPONSE #1: As stated, the U.S. Department of Energy, Richland Field Office is filing the survey plat.**<br><br>ECOLOGY COMMENT #2: Concur. | Closed by Ecology NOD Response Table of 7/20/93 |
| 45. | ECOLOGY COMMENT #1: Append C. Appendix C indicates the presence of oil in some of the waste stored at the unit. Therefore, incorporate sampling and analysis for petroleum waste into the closure plan. Address potential PCB contamination.<br><br>**RL/WHC RESPONSE #1: See response to Comment No. 4.**<br><br>ECOLOGY COMMENT #2: See comment number 4.<br><br>**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 4.** | Closed per UMM of 9/8/93 |
| 46. | ECOLOGY COMMENT #1: Append D. One of the spill reports states that NaOH formed when a container leaked allowing the waste to react with water. This contradicts earlier statements in the closure plan that only metal carbonates were formed from such an incident.<br><br>Correct inconsistency.<br><br>**RL/WHC RESPONSE #1: See response to Comment No. 13.**<br><br>ECOLOGY COMMENT #2: See comment number 13. | Closed per UMM of 9/8/93 |

| No. | Comments/Response | Concurrence |
|---|---|---|

**RL/WHC RESPONSE #2: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.**

47. ECOLOGY COMMENT #1: Appendix D. The waste receiving procedures are not adequately defined.

Give a detailed discussion on the procedures used for acceptance of waste at the unit. This must include any documentation available on verification of types of waste received at the unit. In other words, can it be verified that the waste identified in Appendix C table are the only wastes sent to the unit? Section 3.0 would be an appropriate location to include this discussion.

**RL/WHC RESPONSE #1: The waste acceptance criteria are discussed in Section 3.2 and elaborated on in the response to Comment No. 9. Also, both a logbook and inventory are maintained for the 4843 AMSF. The inventory is the source of Appendix C. The weekly inspections verify that the containers identified on the inventory are the only containers in the 4843 AMSF. Any waste containers not on the inventory would have generated an event fact sheet. No such "orphan" waste has been found at the 4843 AMSF. Also, the 4843 AMSF remains locked unless waste containers are being moved in or out or when the inspections occur.**

**The requested information on past operations is included in Section 3.0. The description of procedures used for past operation of the 4843 AMSF will not be included.**

ECOLOGY COMMENT #2: The information provided in the closure plan and the response is inadequate.

Last paragraph of the response, see number 7.

**RL/WHC RESPONSE #2: The statement in the previous comment is too generalized to allow for a response.**

| No. | Comments/Response | Concurrence |
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**For concerns on past operating documents, see Comment No. 7, RL/WHC Response #2.**

48. ECOLOGY COMMENT #1: 7-9/22. The text states that if portions of the building do not meet the action levels presented in this closure plan, these portions will be removed and disposed of.

This is not adequate. All remediation activities associated with the building, in regard to dangerous wastes, must be accomplished via the closure plan. This includes the potential demolition of the site.

**RL/WHC RESPONSE #1: See the second paragraph of the response to Comment No. 39.**

ECOLOGY COMMENT #2: Alternative closure options must be presented in the closure plan.

Concur with the revision of Section 7.4 of the closure plan.

**RL/WHC RESPONSE #2: The revision of Section 7 will include more detail on disposal options if it is not possible to decontaminate portions of the building to less than the action levels.**

## ADDITIONAL COMMENTS ADDED FROM THE ECOLOGY LETTER OF 7/20/93:

49. ECOLOGY COMMENT #1: General. The wastes described on page 2 of 11 of the Part A (Rev. 2 dated 5/31/91), consist of dangerous and mixed alkali metal wastes. The storage area floor plan on page 8 of 11 of the Part A (Rev. 2 dated 5/31/91), identifies storage of dangerous and mixed alkali metal wastes. Section 2.2, lines 18-28, describes the storage of dangerous and mixed alkali metal wastes. Figure 2-3 identifies storage of dangerous and mixed alkali metal wastes. Section 3.2, lines 3-4, describes the storage of dangerous and mixed alkali

| No. | Comments/Response | Concurrence |
|---|---|---|

wastes. Section 3.3, lines 36-39, also describes the storage of dangerous and mixed alkali wastes.

Section 3-0*[sic]*, lines 28 and 29, identify a nonwaste material which is also stored in the 4843 AMSF. The photograph on page 10 of 11 of the Part A (Rev. 2, dated 5/31/91), contains what appears to be containerized nonwaste material. Similarly, the photograph of Appendix E-5 contains what is identified as "nonwaste lithium metal container."

As provided by the examples above, there are contradicting descriptions and statements of the materials stored in 4843 AMSF. A detailed description of the unit within the text of the closure plan is necessary to satisfy WAC-173-303-610(3). A chronological history of the unit which provides times and waste locations/configurations within the unit is requested.

**RL/WHC RESPONSE #1: The text of the closure plan (Section 2.2, pages 18 to 28; Figure 2-3; Section 3.2, pages 3 to 4; Section 3.3, pages 35 to 39; and other areas if required) will be modified to include storage of the alkali metal product materials (lithium, sodium, and sodium-potassium alloy). The descriptions in the Part A permit application will not be modified since the storage of product material is not regulated by WAC 173-303. Comment No. 10, RL/WHC Response #2 provides additional details on the past storage configurations.**

50. ECOLOGY COMMENT #1: General. Section 4.2 describes the 340 Facility and Tanker as maintaining records providing laboratory reports with chemical, biological, and physical analysis of samples. Copies of reports which represent the types of wastes stored at 4843 AMSF are requested. In addition, a process description which would allow a waste characterization evaluation to be made is requested.

**RL/WHC RESPONSE #1: Per the Unit Managers' Meeting on September 8, 1993, it is understood that this comment is directed at Section 4.2 of the closure plan and**

| No. | Comments/Response | Concurrence |
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**is not a direct request for information.**

**As discussed in the Unit Managers' Meeting on September 8, 1992, Section 4.2 of the closure plan will be rewritten and expanded to justify and fully identify the source of the waste characterization information. Supporting information may include process knowledge, analytical data, location of where and how the waste was generated, or any other pertinent information needed to understand and explain waste characterization.**

51. ECOLOGY COMMENT #1: General. Appendix C appears to contain the April 1991 waste inventory for the 4843 AMSF. During review of the inventory, it was noted that the wastes were not presented in numerical order and also that numbers appear to have been omitted (i.e., numbers 13-43, 46, 48, etc.). Please provide an explanation of the omissions. Also, please provide an explanation of the radiological material counts. Do these counts represent the monthly radiation survey for April 1991?

**RL/WHC RESPONSE #1: As waste drums (both radioactive mixed and non-radioactive dangerous waste) were received into the 4843 AMSF they were numbered in a chronological order. As time passed, 39 drums of radioactive mixed waste were repackaged into 10 drums, 2 drums became 4, etc. The total amount of waste has remained constant, but the number of containers has been reduced. The duplicate containers were not included on the all-time inventory because it would have artificially increased the amount of waste stored in the 4843 AMSF. The next revision of the closure plan will have additional explanatory information added to Appendix C "Current Waste Inventory."**

**At any given time, the radiological material counts represent the results of the latest monthly radiological survey of the waste stored in the 4843 AMSF. This survey is performed in accordance with Health Physics procedures.**

52. ECOLOGY COMMENT #1: General. Where applicable, the closure plan must specify

| No. | Comments/Response | Concurrence |
|---|---|---|

what specific parameters will be analyzed. For example, Page 7-4, lines 1-4 refer to sodium carbonate and sodium hydroxide with no mention of total metals (sodium and lithium). Similarly, Page 7-4, lines 11-12 describe only the concern for carbonates. Currently, within the text of the closure plan, it is proposed to quantify concentrations of compounds. Conversely, Appendix G, proposes to utilize SW-846 Method 6010 which will not yield a concentration of a compound. It should be noted that the sampling parameters are selected based on the waste characteristics. Upon identification of the characteristics associated with the wastes stored at this facility, all references to specific sampling parameters throughout the closure plan should be corrected accordingly. In addition, when deciding upon sampling parameters and analytes, applicable regulations should be evaluated to ensure that clean closure can be achieved in accordance with WAC 173-303.

**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comments have been closed and consolidated with Comment No. 52: No. 13 (4-2/1), No. 14 (4-2/23), No. 17 (6-1/22), No. 20 (6-1/37), No. 30 (7-4/1), No. 46 (Appendix D), No. 66 (Appendix G/ Table G-1), No. 68 (Appendix G-5/Table G-1), and No. 74 (7-3/12-13).**

**RL/WHC RESPONSE #1: The closure plan will be modified to include lithium, sodium, carbonate, and hydroxide as specific analytical parameters. Additional details concerning sampling parameters are expected to be resolved during the Data Quality Objective (DQO) process for development of the sampling and analysis plan for this unit. The DQO process is expected to occur during Fiscal Year 1994 and after the issuance of Revision 1 of this closure plan. Ecology is invited to and is expected to be a major player in the DQO process.**

53. ECOLOGY COMMENT #1: General. Please provide the design condition calculations utilized to obtain the maximum storage of 22,000 gallon drums (400 55-gallon drums) presented in the Part A permit application.

| No. | Comments/Response | Concurrence |
|---|---|---|

RL/WHC RESPONSE #1: The 22,000 gal (400 55-gal drums) maximum design capacity for the 4843 AMSF was originally calculated for the original Part A permit application submitted during 1987. The original calculations are no longer available. However, discussions with the 4843 AMSF personnel and the personnel responsible for the Part A permit application indicate that the standard engineering practice of using the maximum capacity of the building was used in the original calculation.

The maximum capacity, in terms of 55-gal drums, can be estimated by using information provided in the closure plan Appendix E, Figures E-5 and E-6. These photos show pallet racks (three pallets high) with two pallets to the right of the rollup door, three pallets in front of the rollup door, and one pallet to the left of the rollup door. There is a 'dead-space' in the extreme left corner of the building where two pallet racks come together. This dead space is about one pallet wide. Therefore, each side of this square building is about seven pallets wide.

The estimated capacity will be based on having pallets stacked three high along each wall and a single level across the floor. The north and south walls would have pallets stacked 7 long x 3 high for 21 pallets. The east and west walls would have pallets stacked 5 long x 3 high for 15 pallets. This is a square building; one stack of pallets must be subtracted from each end of two walls. With the walls covered with pallets, the remaining floor area is 5 pallets long x 5 pallets wide for 25 pallets. Total number of pallets is 21 + 15 + 25 = 61. Total number of drums is 61 pallets x 4 drums per pallet for 244 drums.

The theoretical maximum value of the building would be 7 pallets wide x 7 pallets long x 3 pallets high for 147 pallets or 588 drums (147 x 4). This value could not be achieved in practice since there is no allowance for access into the building. The value of 588 drums can be taken as the upper limit of the capacity of the 4843 AMSF to store drums.

| No. | Comments/Response | Concurrence |
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| | **The estimates of 244 drums is less than the Part A permit design capacity of 400 drums. Good engineering practice would allow for additional storage space so that the maximum storage volume could not be exceeded during operations. Also, 400 drums would allow access into the building when compared to the theoretical maximum of 588 drums. Therefore, 400 drums is a reasonable value of the design capacity that meets the physical limitations of the facility.**<br><br>**The annual maximum capacity is a direct requirement of the Part A permit application and not directly required by the closure plan. The above information will not be added to the closure plan. The Part A is appropriate as is, since the 400 drums represent a maximum storaage volume.** | |
| 54. | ECOLOGY COMMENT #1: General. Copies of the routine monthly radiation survey logs are requested.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 2.** | Closed per UMM of 9/8/93 |
| 55. | ECOLOGY COMMENT #1: General. It is requested that all available aerial photographs which include the unit, be made available for review by the unit manager.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 5.** | Closed per UMM of 9/8/93 |
| 56. | ECOLOGY COMMENT #1: 4.0. Chapter 4.0 does not include a description of the radiological characteristics of the waste. As the radioactive characteristics are intrinsic to the mixed waste, a description of the radionuclides associated with the waste is required.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 2.** | Closed per UMM of 9/8/93 |

| No. | Comments/Response | Concurrence |
|---|---|---|
| 57. | ECOLOGY COMMENT #1: 7.3.3. Describe in detail, the procedures to be utilized during the initial radiation survey identified in Section 7.3.3, page 7-4, line 6. Such description should include an identification of what type of radiation the equipment will be calibrated to detect, equipment identification by make and model number, procedures for actual survey of floor, etc. As the closure plan is a stand alone document, the inclusion of a detailed description of survey procedures is required by WAC-173-303-610(3).<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 2.** | Closed per UMM of 9/8/93 |
| 58. | ECOLOGY COMMENT #1: 7.3.2. Similarly, include procedures to perform an initial radiation survey for the walls of the building.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 2.** | Closed per UMM of 9/8/93 |
| 59. | ECOLOGY COMMENT #1: 7-6/36-40. The procedures of Environmental Investigation Instruction EII 1.11 are referenced for evaluation of data. This particular procedure (EII 1.11) of the EII manual was not available to the reviewer prior to issuance of this NOD Response to Response Table. Please provide a copy of EII 1.11 for review.<br><br>**COMMENT CONSOLIDATION: As agreed at the Unit Managers' Meeting of September 8, 1993, the following comment has been closed and consolidated with Comment No. 59: No. 76 (7-2/17-0).**<br><br>**RL/WHC RESPONSE #1: A copy of the Environmental Investigations and Site Characterization Manual (WHC-CM-7-7) has been provided to the Ecology Kennewick Office.** | |

| No. | Comments/Response | Concurrence |
|---|---|---|

60. ECOLOGY COMMENT #1: 7.3.9/7-7. The details on sample packaging, shipping, preservation, quality assurance/quality control procedures, analytical methods and analytes, media identification, etc., are required by WAC-173-303-610(3)(v) to be included in the closure plan. Also, as the document is a stand alone document, the reference to packaging specifications included in "Sample Packaging and Shipping" (WHC 1988) in Section 7.3.9, Page 7-7, in lieu of a detailed description is inappropriate.

**RL/WHC RESPONSE #1: Additional information or the appropriate reference will be included in the rewrite of Section 7.**

**Within the scope of the *Hanford Federal Facility Agreement and Consent Order*, the closure plans are part of the administrative record. It is appropratae for the closure plan to reference the other documents. The admnistrative record provides the overall detail required to document all activities associated with closure.**

**Referencing the EII procedures (e.g., EII 5.11 "Sample Packaging and Shipping") is appropriate. This method is used in all other closure plans and will continue to be used.**

61. ECOLOGY COMMENT #1: Additional Appendix. It has been agreed that the DOE will submit annual closure cost estimates. For the purpose of identifying closure goals (clean closure by decontamination versus clean closure by removal), closure cost estimates for this unit are requested to be included as an appendix.

**RL/WHC RESPONSE #1: The draft *Permit for the Treatment, Storage, and Disposal of Dangerous Waste for the Hanford Facility* states "The permittees shall submit to the Department on or before October 31 of each calendar year an updated closure cost estimates as of September 30 of the past fiscal year. This cost estimate shall include final and undated projections of anticpated costs for closure and postclosure for TSD units incorporated into Parts III or V of this Permit. The cost estimate shall be submitted as a unit-specific and as a total closure cost**

| No. | Comments/Response | Concurrence |
|---|---|---|

**estimate for those TSD units included in Parts III or V of this Permit."**

**The 4843 AMSF closure cost estimates will be included in the site-wide report and not as an appendix to the closure plan.**

62. ECOLOGY COMMENT #1: 7-4/50. EII 5.5 is cited as containing a description of equipment decontamination procedures. EII 5.5 appears to address decontamination of sampling equipment prior to taking the equipment into the field. On the same page, lines 18-20, it is described that chipping or coring of the concrete will be conducted. Confirm if those procedures of EII 5.4 are appropriate for inclusion.

**RL/WHC RESPONSE #1: The EII 5.5 "1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment" is the procedure that would be followed for the decontamination of the concrete chipping and coring sampling equipment.**

63. ECOLOGY COMMENT #1: 7-4/47-49. Describe decontamination wash water. If decontamination procedures are to be conducted in the field, the closure plan should include a detailed description of where and under what conditions those procedures will be conducted.

**RL/WHC RESPONSE #1: The text will be modified to include additional details. However, as indicated in Comment No. 39, detailed descriptions of field activities will be part of the Decommissioning Work Plan.**

64. ECOLOGY COMMENT #1: 7-5/7.3.5. Please include a provision for the field team leader or assignee identified in the EII 1.5, to document factory tracking numbers (i.e., batch or lot numbers associated with factory decontamination practices) for all containers and preservatives (where applicable) utilized during closure sampling activities.

**RL/WHC RESPONSE #1: Within the Westinghouse Hanford Company (WHC) Process &**

| No. | Comments/Response | Concurrence |
|---|---|---|

**Analytical Laboratory (PAL), procedures are maintained that track sample containers' identification numbers relative to the sampling activities being performed. These procedures provide for site-wide tracking and are compatible with both RCRA and CERCLA requirements. The PAL procedures also require the maintenance of quality assurance records for this information. Inclusion of the requested provision is unnecessary due to the existing site-wide tracking effort.**

65. ECOLOGY COMMENT #1: 7-4/17-20. It is stated, "samples may be obtained by chip or coring method." The Washington State Department of Ecology's "Guidance for Clean Closure of Dangerous Waste Facilities" (Draft) dated April 1993, recommends that surface sampling be accomplished by collecting chips to a depth of approximately 1/2 inch from the surface. The guidance document also recommends that where surface contamination is present or in areas containing constituents that can permeate the concrete, core samples may be appropriate. The closure plan must specify what kind of concrete samples will be obtained (chip or core) from which locations. If random sampling is conducted, surface sampling (chip) may be the most appropriate. If biased sampling or decontamination verification after contamination confirmation is conducted, "subconcrete" sampling (core) may be appropriate.

**RL/WHC RESPONSE #1: The closure plan will be modified to identify that chip sampling will be used to collect samples from the concrete floor. Also, the text will be modified to identify that coring will be used for authoritative sampling of cracks.**

66. ECOLOGY COMMENT #1: Appendix G/Table G-1. After the waste characteristics of Chapter 4.0 are properly identified and the sampling parameters are agreed upon, include the additional analytes (and analytical methods) to Table G-1 of Appendix G. — Closed per UMM of 9/8/93

**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.**

| No. | Comments/Response | Concurrence |
|---|---|---|
| 67. | ECOLOGY COMMENT #1: Figure 7-1. Please add a rinsate component sampling flow path line to Figure 7-1.<br><br>**RL/WHC RESPONSE #1: The purpose of Figure 7-1 is to detail the primary steps required to reach closure of the facility. Each box in Figure 7-1 contains steps that are not shown for the sake of clarity. The rinsate component sampling flow path is one of the steps implied in the 'Decontaminate' boxes. Because the rinsate component sampling flow path does not lead directly to closure, it is not appropriate to include this path in Figure 7-1.** | |
| 68. | ECOLOGY COMMENT #1: Appendix G-5/Table G-1. The referenced "analytes of interest and analytical methods." Regarding lithium, SW-846 method description 6010 does not include lithium on Table 1. Therefore, the recommended wavelength, as well as the detection limit, are requested to be identified and confirmed for lithium using method 6010.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.** | Closed per UMM of 9/8/93 |
| 69. | ECOLOGY COMMENT #1: 7-10/7.7. Please include a provision to submit to the Dept. of Ecology Unit Manager, a copy of the field logbook upon completion of closure activities.<br><br>**RL/WHC RESPONSE #1: Including the field logbook as part of the closure plan is inappropriate and redundant. The field logbook is a quality assurance (QA) record that is maintained separately and independently from the closure plan. On this basis, it should not be requested as part of the closure plan. As a QA record, a field logbook is available for inspection by Ecology irrespective of the closure plan requirements. A field logbook could be inspected by Ecology upon request. Adding the requested provision is not necessary.** | |

| No. | Comments/Response | Concurrence |
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70. ECOLOGY COMMENT #1: 7-10/7.7. Please include a provision to submit to the Dept. of Ecology Unit Manager, copies of all analytical results generated during closure sampling activities including radiation surveys.

**RL/WHC RESPONSE #1: The *Hanford Federal Facility Agreement and Consent Order*, Article XXXV, Paragraph 101, requires that copies of all analytical laboratory results be made available to Ecology. Adding such a provision to the closure plan is redundant.**

**Radiation surveys fall under the provision discussed in Comment No. 2.**

71. ECOLOGY COMMENT #1: 7-10/7.7. Please include a provision to submit to the Dept. of Ecology Unit Manager, supporting documentation supplied by the independent professional engineer's certification, if applicable.

**RL/WHC RESPONSE #1: This provision is already included in the closure plan. Section 7.7, page 7-10, lines 8 to 9 read, "Documentation supporting the independent professional engineer's certification will be retained and furnished to Ecology upon request."**

72. ECOLOGY COMMENT #1: 3-1/6-7. A review of FFTF process wastes has generated a question concerning the lithium wastes stored at 4843 AMSF. From page 3-1, lines 6-7, it appears that 4843 AMSF stored wastes generated at the FFTF "and at various other Hanford Site operations that used alkali metals." Please identify all of the sources of wastes stored at this unit. In addition, amend Chapter 4.0 accordingly to provide adequate waste characteristic descriptions.

**RL/WHC RESPONSE #1: The closure plan will be revised, where appropriate, to identify the container, source, and type of waste (e.g., Waste Container No. 01, 324 Building, 300 Area, waste sodium metal). Text changes may include a specific list of buildings replacing the text in page 3-1 lines 6 to 7 and clarification of the information contained in Appendix C.**

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| 73. | ECOLOGY COMMENT #1: Appendix C/C-11. Identifies waste number 77 as having been generated at the 4843 AMSF unit. Identify what this waste represents and confirm, if applicable, whether this waste represents waste generated during an event described in Appendix D.<br><br>**RL/WHC RESPONSE #1: Waste container No. 77 was generated at the 4843 AMSF during repackaging of lithium contaminated pipe into a new container. Specifically, a piece of pipe was cut with the stub end containing about 1/8 lbs of lithium metal going into container No. 77. While the containers being repackaged can be identified, the specific containers that contained the piece of piping associated with this repackaged operation cannot be identified. The contents of container No. 77 is totally unrelated to the events discussed in Appendix D.** | |
| 74. | ECOLOGY COMMENT #1: 7-3/12-13. It is indicated that the wall wipe samples will be analyzed for lithium and sodium carbonates. Similarly, on page 7-4, lines 22 and 23, it is indicated that the concrete samples will be analyzed for "soluble" sodium and lithium carbonates. Appendix G, page App G-5, identifies SW-846 Method 6010 as the analytical method to be utilized. It should be noted that Method 6010 will yield detection concentrations as elements rather than as carbonate and hydroxide compounds. In the response to number 13 of the NOD, it is indicated that the plan will be modified to address both hydroxides and carbonates. If hydroxides and carbonates are to be sampled for, Table G-1 of Appendix G should reflect specific analytical methods other than SW-846 Method 6010.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 52.** | Closed per UMM of 9/8/93 |
| 75. | ECOLOGY COMMENT #1: 7-6/20-22. The referenced references a modification process as outlined by EII 1.4. Include a provision that the modification procedures of WAC 173-303-610(3) will be followed in the event that the closure plan must be | |

| No. | Comments/Response | Concurrence |
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| | amended.<br><br>**RL/WHC RESPONSE #1: The EII 1.4 affects only modifications to other EIIs. It has no direct effect on this or any other closure plan. If a modification to an EII occurs and an approved closure plan requires additional changes to remain current, then the change process outlined in WAC 173-303-610(3) will be followed. There is no other way to revise an approved closure plan. Adding such a statement would be redundant.** | |
| 76. | ECOLOGY COMMENT #1: 7-2/17-20. The procedures of Environmental Investigation Instruction EII 2.3 are referenced for unit characterization. This particular procedure (EII 2.3) of the EII manual was not available to the reviewer prior to issuance of this NOD Response to Response Table. Please provide a copy of Ell 2.3 for review.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 59.** | Closed per UMM of 9/8/93 |
| 77. | ECOLOGY COMMENT #1: 7-3/43. During a site visit on July 9, 1993, several visible cracks were noted. Delete the statement regarding "no visible cracks within the floor."<br><br>**RL/WHC RESPONSE #1: This sentence will be deleted.** | |
| 78. | ECOLOGY COMMENT #1: 2-2/33-35 and 7-3/44-46. During a site visit on July 9, 1993, the concrete control joints/seams were noted to be filled with dirt rather than rubber. Correct the descriptions.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 27.** | Closed per UMM of 9/8/93 |

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| 79. | ECOLOGY COMMENT #1: 7.3.3. During a site visit on July 9, 1993, the concrete control joints/seams appeared to be the "saw cut 1/8" wide X 1/4" deep" variety, rather than keyed construction joints (as not differentiated on Drawing Number FSK-70E-164 of Appendix B). Include a description of the control joints/seams within the text.<br><br>**RL/WHC RESPONSE #1: As agreed at the Unit Managers' Meeting of September 8, 1993, this comment has been closed and consolidated with Comment No. 27.** | Closed per UMM of 9/8/93 |
| 80. | ECOLOGY COMMENT #1: 7.3.3. During a site visit on July 9, 1993, the dirt within about a foot long section of concrete control joint was removed. A substantial crack was noted to run the length of the dirt-cleared section. Prior to Revision 1 of the closure plan, propose to identify and document the extent of this crack noted within the control joint.<br><br>**RL/WHC RESPONSE #1: All cracks will be identified and included in the sampling plan. Some of the cracks are located inside of the current (October 1993) radiation zone. To keep the personnel's radiation exposure as low as reasonably achievable, the identification of the cracks will occur after the following events occur: removal of the radioactive mixed waste from the facility and the evaluation of the status of the radiation zone and radiological controlled area at the 4843 AMSF for potential release.** | |
| 81. | ECOLOGY COMMENT #1: 7.3.3. During a site visit on July 9, 1993, numerous stains were noted on the concrete floor. As a forklift has been reported to have been utilized at the storage unit and oil stains may have been generated from its usage, the exact locations of the two spill incidents are requested to be identified.<br><br>**RL/WHC RESPONSE #1: The leak of February 5, 1990, involving Container No. 80 (the DOT-7A metal box) took place at the current location of the box. It is located about 5 to 10 feet from the east rollup door and about 5 to 10 feet north** | |

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of the east-west building centerline. No stain was left on the floor.

Information on the leak of April 11, 1988 is sketchy. The operations personnel state that the leak occurred in front of the present cold traps. This is roughly the same general area as the February 5, 1990 leak, but either north 5 to 10 feet or west 5 to 10 feet. Again, no stain was left on the floor.

In general, both leaks appear to have occurred in the northeast quadrant of the building, with the leaks most likely being closer to the center-line of the building than to the north wall.

The presence of oil spills on the floor of the 4843 AMSF is strongly disputed. During the Ecology visit to the 4843 AMSF on July 9, 1993, no oil stains were observed. Oil stains would occur where the forklift was stored or parked for long periods. The forklifts used at FFTF are not stored or parked at the 4843 AMSF. The only observed marks on the floor were the faint black tire marks (similar to skid marks, but fainter) that are commonly left by rubber-tired forklifts operating on smooth concrete floors. The tire tracks are unrelated to closure of this or any other dangerous waste treatment, storage, or disposal facility.

82. ECOLOGY COMMENT #1: 2-3/12-18. During a site visit on July 9, 1993, it was noted that security controls have changed from those described where referenced. Revise the description accordingly.

**RL/WHC RESPONSE #1: The closure plan text will be modified to reflect the current site security control.**

83. ECOLOGY COMMENT #1: 7.3. During a site visit on July 9, 1993, it was mentioned that a radiological survey may be conducted at the unit prior to the approval of the closure plan. Describe how this will affect the closure plan.

| No. | Comments/Response | Concurrence |
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**RL/WHC RESPONSE #1: The effect on the closure plan will be minimal. The presence or absence of radiological contamination or radiological control zones does nothing to modify the WAC 173-303 requirements for operating or closing a dangerous waste storage unit. The same types of analyses, management practices, and safety concerns on the dangerous waste and dangerous waste portions of mixed waste will continue to be addressed. If the radiological control zone inside the 4843 AMSF is released, there is no change in the unit's status as a dangerous waste storage unit.**

**Elimination of the radiological control zone is on example at good managment practice. If the radiological survey can release the radiological control zone in the 4843 AMSF, it will provide the following benefits: reduced sampling cost because no radioactive samples would be generated; reduced cleanup costs because no radioactive or mixed waste would be generated; and increased worker safety because there would be no radiation exposure.**

**The closure plan would be modified to identify that the unit had been surveyed and released as a radiological control zone prior to beginning closure as a dangerous waste storage unit.**

84. ECOLOGY COMMENT #1: 7.3. Through the NOD and response process, it appears that there is an agreement that biased sampling is appropriate and will be utilized during closure activities. Unlike the description on page 7-3 of incorporating survey results into a biased sampling plan relating to the walls, the description of the initial radiation survey of the floor on page 7-4 does not include the incorporation of the survey results as defining biased sampling locations. Include provisions within Section 7.3.3 to incorporate the results of the radiation and visual surveys to define biased sampling locations relating to the floor. The provisions should include a precise method of locating those sampling locations generated during the visual and radiation surveys. Please note, the sampling location scale utilized in Figure 7-2, on page F7-2, would be insufficient to define/determine the biased sample locations.

| No. | Comments/Response | Concurrence |
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**RL/WHC RESPONSE #1: Random sampling plus biased sampling of any cracks (to be added to the closure plan) is considered adequate for sampling the floor. This strategy is also consistent with other closure plans. Unless notable staining, discoloration, or corrosion is found in the concrete floor after waste removal, visual survey for biased sampling will not be added to the closure plan. The inclusion of radiation survey results for determining floor sampling locations will depend on the results of the efforts to release the radiation zone in the 4843 AMSF. If appropriate, those results may be used to determine sampling locations.**

85. ECOLOGY COMMENT #1: 7.3.3. A more detailed description of decontamination verification procedures should be included. The details should specify how decontamination verification will be conducted in the event that it is necessary to repeat decontamination verification. To further explain, if decontamination verification is repeated, the closure plan should specify if samples will be collected from the same random and biased locations, if samples will be collected using chipping, coring, or a combination of chipping and coring methods, etc.

**RL/WHC RESPONSE #1: As part of Revision 1 of the closure plan, Section 7 will include additional information on the activities associated with repeat verification sampling.**

86. ECOLOGY COMMENT #1: Additional Section. During a site visit on July 9, 1993, fiberglass insulation was noted above the sheet metal walls. It was also noted that the fiberglass insulation was torn, worn, and stained in numerous places. On page 7-7, line 34, it is indicated that the surface of the fiberglass insulation will be sampled for decontamination verification purposes. Include an additional section within the closure plan similar to Sections 7.3.2 and 7.3.3 which addresses sampling and verification of the fiberglass insulation.

**RL/WHC RESPONSE #1: See comment No. 28.**

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| 87. | ECOLOGY COMMENT #1: 2-2/37-38. During a site visit on July 9, 1993, it was noted that electric service was not available. Please evaluate this to determine if service will be available during closure activities. If it is found that the previous electric service will not be restored, modify page 2-2, lines 37-38 and provide for an alternate light source to be available during closure activities.<br><br>**RL/WHC RESPONSE #1: The status of the electrical service to the building will be determined and the text of the closure plan will be modified accordingly.** | |
| 88. | ECOLOGY COMMENT #1: 7-7/7.3.9. Please include that split or duplicate samples will be provided to Ecology upon request.<br><br>**RL/WHC RESPONSE #1: The requested provision is outside the scope of the closure plan and is covered by exiting agreements and, therefore, will not be included. The *Hanford Federal Facility Agreement and Consent Order*, Article XXXV, Paragraph 102, requires notification of EPA and Ecology not less than 5 days prior to sampling. At such time, EPA and Ecology may, at their discretion, collect their own split or duplicate samples.** | |

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Subject: SUBMITTAL OF THE 4843 ALKALI METAL STORAGE TREATMENT FACILITY CLOSURE PLAN, REVISION 0 - NOTICE OF DEFICIENCY RESPONSE TABLE (S-4-1)

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